

Case 2956

***Campeloma* Rafinesque, 1819 (Mollusca, Gastropoda): proposed conservation**

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Abstract. The purpose of this application is to conserve the name *Campeloma* Rafinesque, 1819 for a genus of Tertiary and Recent freshwater prosobranch gastropods (family VIVIPARIDAE) from the eastern United States. This name has been continually used for over 130 years but is threatened by a senior subjective synonym *Ambloxis* established by Rafinesque one year earlier. *Ambloxis* has been little used, and then mainly in lists; the names of its included species have never been adopted.

Keywords. Nomenclature; taxonomy; Gastropoda; VIVIPARIDAE; Tertiary and Recent freshwater prosobranch gastropods; *Campeloma*; *Campeloma crassula*.

1. Rafinesque (1818a, p. 355) briefly described a new genus *Ambloxis* and included in it two new nominal species *A. eburnea* and *A. ventricosa*. He did not describe or figure these two species and their names are therefore nomina nuda. In another paper the same year he (Rafinesque, 1818b, p. 107) listed *Ambloxis* as a new genus with four species which he did not name. The following year he (Rafinesque, 1819, p. 423) established the genus *Campeloma* and described a single species *C. crassula* Rafinesque, 1819 which is, therefore, the type species of *Campeloma* by monotypy.

2. Gill (1864, p. 152) identified *Ambloxis* as congeneric with *Campeloma* Rafinesque, 1819, but noted that 'the insufficiency of the generic diagnosis as well as the want of connection with any described species will prevent its adoption'. Binney (1865, p. 45) copied figures of *Lymnula ventricosa* (Binney, 1865, pp. 42, 45, fig. 91) and *Lymnea eburnea* (Binney, 1865, pp. 45-46, fig. 92) from Rafinesque's unpublished manuscript *Conchologia Ohiensis*. The names of these two species were placed in the synonymy of *Melantho decisa* (Say, 1817), and Pilsbry (1917, p. 111) designated the nominal species *L. eburnea* as the type species of *Ambloxis* Rafinesque, 1818. Tryon (1865, p. 82) identified *Ambloxis* as the same as the genus *Melantho* Bowditch, 1822 as used by American authors.

3. Walker (1918, pp. 127, 163) rejected the use of *Ambloxis* and used *Campeloma*. Baker (1928, p. 56) noted Pilsbry's suggested priority of *Ambloxis* over *Campeloma* but rejected the generic change as unwarranted, following Walker (1918, pp. 127,

163). Morrison (1947, p. 29) is the only subsequent author to have used *Ambloxis* as a valid genus in place of *Campeloma*. Parodiz (1956, p. 391) questioned Pilsbry's action in recognizing *Ambloxis*. Recently, Burch (1982a, p. 210; 1982b, p. 264) noted that *Ambloxis* Rafinesque, 1818 was an unidentifiable name and 'occasionally mentioned as possibly being the same as *Campeloma* Rafinesque, 1819'. Sherborn (1923, p. 252) and Neave (1939, p. 137) are the only two nomenclators to list *Ambloxis*.

4. The name *Campeloma* has been extensively used since Gill (1864). Meek & Hayden (1865) were the first to use *Campeloma* for fossil species, and numerous fossil species have been referred to *Campeloma* (Meek, 1871a, 1871b, 1876; Meek & Hayden, 1865; Henderson, 1935). Meek (1876) gave a succinct account of the genus and from this date forward the use of the generic name *Campeloma* was essentially unquestioned. Call (1883) reviewed the history of the use of the generic name *Campeloma* and rejected the use of both *Paludina* 'Lamarck' Férussac, 1812 and *Melantho* Bowditch, 1822 for this group of North American species.

5. Pilsbry (1917, p. 113) noted that *Campeloma crassula* Rafinesque, 1819 was the type species of *Campeloma* by original monotypy and placed *Campeloma* Rafinesque, 1819 as a junior synonym of *Ambloxis* Rafinesque, 1818. Pilsbry claimed that *crassula* could not be recognized from its description, but this belief was based on an inadequate reading of Rafinesque's diagnosis. *C. crassula* has been used by various workers, such as Burch & Tottenham (1980, p. 86, figs. 42, 54-55). Thiele (1931, p. 116) tentatively listed *Ambloxis* as a synonym of *Campeloma*. Clench (1962, pp. 273-274) listed *Ambloxis* as a synonym of *Campeloma* but failed to understand why Pilsbry chose to substitute *Ambloxis* for the commonly used *Campeloma*. He observed (p. 276): 'The generic name *Campeloma* has been in general use for nearly one hundred years, while *Ambloxis* has never been used, other than casually mentioned as being possibly the same as *Campeloma*'. Baker (1964, pp. 166-167) catalogued a number of species, using *Ambloxis* as a 'preferred genus' which he used 'in a broad sense'. Clarke (1973, p. 216) and Vaught (1989, p. 17) tentatively listed *Ambloxis* as a synonym of *Campeloma*. *Campeloma* has been used extensively in molluscan literature (Gill, 1864; Call, 1883, 1886, 1888a, 1888b, 1894; Pilsbry, 1898; Baker, 1902; Pilsbry, 1917; van Cleave & Altringer, 1937; Hubricht, 1943; van der Schalie, 1964; Anderson, 1966; Vail, 1979a, 1979b; Karlin et al., 1980; Karlin, 1981; Kotrla & Dougherty, 1984). *Campeloma* appears as a genus in the standard nomenclators (Agassiz, 1842-1846, 1846; Herrmannsen, 1846; Scudder, 1882; Sherborn, 1924; Neave, 1939). *Campeloma* has been used exclusively in the studies of the gastropod faunas in North America (Baker, 1902; Hannibal, 1912; Baker, 1928; Goodrich & van der Schalie, 1944; Robertson & Blakeslee, 1948; Clench & Turner, 1956; Harman & Berg, 1971; Clarke, 1973; Wood, 1982; Thompson, 1984; Jokinen, 1983, 1992; Smith, 1991), and in systematic guides (Walker, 1918; Prashad, 1928; Thiele, 1931; La Rocque, 1953, 1968; Parodiz, 1956; Clench, 1959, 1962; Leonard, 1959; Starobogatov, 1970; Barnes, 1974; Burch, 1978, 1979, 1982a; Burch & Tottenham, 1980; Clarke, 1981; Boss, 1982; Turgeon et al., 1988; Vaught, 1989; Brown, 1991).

6. In order to avoid undesirable changes in nomenclature and to preserve the stability of generic names in the VIVIPARIDAE we propose that the generic name *Campeloma* Rafinesque, 1819 be conserved by suppression of *Ambloxis* Rafinesque, 1818.

7. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary powers to suppress the name *Ambloxis* Rafinesque, 1818 for the purposes of the Principle of Priority but not for those of the Principle of Homonymy;
- (2) to place on the Official List of Generic Names in Zoology the name *Campeloma* Rafinesque, 1819 (gender: neuter), type species by monotypy *Campeloma crassula* Rafinesque, 1819;
- (3) to place on the Official List of Specific Names in Zoology the name *crassula* Rafinesque, 1819, as published in the binomen *Campeloma crassula* (specific name of the type species of *Campeloma*);
- (4) to place on the Official Index of Rejected and Invalid Generic Names in Zoology the name *Ambloxis* Rafinesque, 1818, as suppressed in (1) above.

References

- Agassiz, L. 1842–1846. *Nomina systemica generum molluscorum* (recognoverunt J.E. Gray, C.Th. Menke, et H.E. Strickland), in: *Nomenclator zoologicus, continens nomina systematica generum animalium, tam viventium quam fossilium*. xiv, 98 pp. Jent & Gassmann.
- Agassiz, L. 1846. *Nomenclatoris zoologici; index universalis*, in: *Nomenclator zoologicus, continens nomina systematica generum animalium, tam viventium quam fossilium*. viii, 393 pp. Jent & Gassmann.
- Anderson, B.E. 1966. Studies on the molluscan genus *Campeloma* Rafinesque, 1819. *Sterkiana*, 23: 9–18.
- Baker, F.C. 1902. The Mollusca of the Chicago area. The Gastropoda. *Bulletin of the Natural History Survey of the Chicago Academy of Sciences*, 3(2): 137–410.
- Baker, F.C. 1928. The fresh-water Mollusca of Wisconsin. Part I. Gastropoda. *Bulletin of the Wisconsin Geological and Natural History Survey*, 70(1): i–xx, 1–494.
- Baker, H.B. 1964. Type land snails in the Academy of Natural Sciences of Philadelphia. Part 3. Linnophile and thalassophile Pulmonata. Part 4. Land and freshwater Prosobranchia. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 116: 149–193.
- Barnes, R.D. 1974. *Invertebrate Zoology*, (Ed. 3). W.B. Saunders, Philadelphia.
- Binney, W.G. 1865. Land and fresh-water shells of North America, part 3. Ampullariidae, Valvatidae, Viviparidae, fresh-water Rissoidae, Cyclophoridae, Truncatellidae, fresh-water Neritidae, Helicinidae. *Smithsonian Miscellaneous Collections*, 7(144): i–viii, 1–120.
- Boss, K.J. 1982. Mollusca. Pp. 945–1166 in Parker, S.P. (Ed.) *Synopsis and classification of living organisms*. McGraw-Hill, New York.
- Brown, K.M. 1991. Mollusca: Gastropoda. Pp. 285–314 in Thorp, J.H. & Covich, A.P. *Ecology and classification of North American freshwater invertebrates*. Academic Press, San Diego.
- Burch, J.B. 1978. An outline of classification of the Recent freshwater gastropods of North America (North of Mexico). *Journal de Conchyliologie*, 115(1–2): 3–9.
- Burch, J.B. 1979. Genera and subgenera of Recent freshwater gastropods of North America (North of Mexico). *Malacological Review*, 12: 97–100.
- Burch, J.B. 1982a. *Freshwater snails (Mollusca: Gastropoda) of North America*. Environmental Monitoring and Support Laboratory, Office of Research and Development, EPA-600/3-82-026. 294 pp., 775 figs. United States Environmental Protection Agency, Cincinnati, Ohio.
- Burch, J.B. 1982b. North American freshwater snails. Identification keys, generic synonymy, supplemental notes, glossary, references, index. *Walkerana, Transactions of the POETS Society*, 4: 217–365.
- Burch, J.B. & Tottenham, J.L. 1980. North American freshwater snails. Species list, ranges and illustrations. *Transactions of the Physiological, Oecological, Experimental Taxonomic and Systematics Society*, 3: 81–215.

- Call, R.E. 1883. Note on the genus *Campeloma* of Rafinesque. *American Naturalist*, **17**(6): 603–608.
- Call, R.E. 1886. On the genus *Campeloma*, Rafinesque, with a revision of the species, Recent and fossil. *Bulletin of the Washburn College Laboratory of Natural History*, **1**(5): 149–165.
- Call, R.E. 1888a. On the gross anatomy of *Campeloma*. *American Naturalist*, **22**: 491–497.
- Call, R.E. 1888b. Notes on the gross anatomy of *Campeloma*. *Proceedings of the Iowa Academy of Sciences*, **1888**: 16–17.
- Call, R.E. 1894. On the geographic and hyposmetric distribution of North American Viviparidae. *American Journal of Science*, **48**: 132–141.
- Clarke, A.H. 1973. The freshwater molluscs of the Canadian Interior Basin. *Malacologia*, **13**(1–2): 1–509.
- Clarke, A.H. 1981. *The freshwater molluscs of Canada*. 446 pp. National Museum of Natural Sciences, National Museum of Canada, Ottawa.
- Clench, W.J. 1959. Mollusca. Pp. 1117–1160 in Edmondson, W.T. (Ed.), *Freshwater Biology*. John Wiley & Sons, New York.
- Clench, W.J. 1962. A catalogue of the Viviparidae of North America with notes on the distribution of *Viviparus georgianus*, Lea. *Occasional Papers on Mollusca, Museum of Comparative Zoology*, **2**(27): 261–287.
- Clench, W.J. & Turner, R.D. 1956. Freshwater mollusks of Alabama, Georgia, and Florida from the Escambia to the Suwannee River. *Bulletin of the Florida State Museum, Biological Sciences*, **1**(3): 97–239.
- Gill, T. 1864. Several points in ichthyology and conchology. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **16**: 151–152.
- Goodrich, C. & van der Schalie, H. 1944. A revision of the Mollusca of Indiana. *American Midland Naturalist*, **32**(2): 257–326.
- Hannibal, H. 1912. A synopsis of the Recent and Tertiary freshwater Mollusca of the California Province, based upon ontogenetic classification. *Proceedings of the Malacological Society*, **10**(2–3): 112–211.
- Harman, W.N. & Berg, C.O. 1971. The freshwater snails of Central New York, with illustrated keys to the genera and species. *Search*, (Cornell University Agricultural Experiment Station, Ithaca, New York), **1**(4): 1–68.
- Henderson, J. 1935. Fossil non-marine Mollusca of North America. *Geological Society of America. Special Papers*, no. 3: i–vii, 1–313.
- Herrmannsen, A.N. 1846. *Indicis Generum Malacozoorum Prinordia*, vol. 1. 637 pp. Theodori Fischeri, Cassellis.
- Hubricht, L. 1943. Notes on the sex ratios in *Campeloma*. *Nautihus*, **56**(4): 138–139.
- Jokinen, E.H. 1983. The freshwater snails of Connecticut. State Geological and Natural History Survey of Connecticut. *Department of Environmental Protection Bulletin*, **109**: 1–83.
- Jokinen, E.H. 1992. The freshwater snails (Mollusca: Gastropoda) of New York State. *New York State Museum Bulletin*, no. 482: i–vi, 1–112.
- Karlin, A.A. 1981. Genetic variation and parthenogenesis in *Campeloma* (Viviparidae). *Bulletin of the American Malacological Union*, **1981**: 37.
- Karlin, A.A., Vail, V.A. & Heard, W.H. 1980. Parthenogenesis and biochemical variation in southeastern *Campeloma geniculum* (Gastropoda: Viviparidae). *Malacological Review*, **13**: 7–15.
- Kotrla, M.B. & Dougherty, B.J. 1984. A comparative study of shell shape in four populations of *Campeloma* (Gastropoda: Viviparidae) [Abstract]. *Program for the Fiftieth Annual Meeting of the American Malacological Union*, **1984**: 29.
- La Rocque, A. 1953. Catalogue of the Recent Mollusca of Canada. *National Museum of Canada Bulletin*, **129**: 1–406.
- La Rocque, A. 1968. Pleistocene Mollusca of Ohio. *Ohio Division of Geological Survey, Bulletin*, **62**(3): xvii–xxiv, 357–553.
- Leonard, A.B. 1959. Handbook of gastropods in Kansas. *University of Kansas Museum of Natural History, Miscellaneous Publication*, no. 20: 1–224.

- Meek, F.B. 1871a. Descriptions of new species of fossils from Ohio and other western states and territories. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **23**: 159–184.
- Meek, F.B. 1871b. Preliminary paleontological report, consisting of lists of fossils, with descriptions of some new types, etc. Pp. 287–318 in Hayden, F.V., *Preliminary report of the United States Geological Survey of Wyoming, and portions of contiguous territories*, being a second annual report of progress, [Vol. 4] conducted under the authority of the Secretary of the Interior. Government Printing Office, Washington.
- Meek, F.B. 1876. A report on the invertebrate Cretaceous and Tertiary fossils of the Upper Missouri Country, in Hayden, F.V. *Report of the United States Geological Survey of the Territories*, **9**: i–lxiv, 1–629.
- Meek, F.B. & Hayden, F.V. 1865. Palaeontology of the Upper Missouri; invertebrates. *Smithsonian Contributions to Knowledge*, **14**(Art. 5)(172): 135 pp.
- Morrison, J.P.E. 1947. Notes on the Philippine snail, *Viviparus burroughianus* Lea. *Nautilus*, **61**(1): 29–30.
- Neave, S.A. 1939. *Nomenclator Zoologicus*. Vol. 1 (A-C), 957 pp.; vol. 2 (D-L), 1025 pp. Zoological Society of London, London.
- Parodiz, J.J. 1956. Notes on the fresh-water snail *Leptoxis (Mudalia) carinata* (Bruguière). *Annals of the Carnegie Museum*, **33**(23): 391–405.
- Pilsbry, H.A. 1898. *Campeloma decisum* Say, reversed. *Nautilus*, **10**: 118.
- Pilsbry, H.A. 1917. Rafinesque's genera of fresh-water snails. *Nautilus*, **30**(10): 109–114.
- Prashad, B. 1928. Recent and fossil Viviparidae. A study in distribution, evolution and paleogeography. *Memoirs of the Indian Museum*, **8**(4): 153–251.
- Rafinesque, C.S. 1818a. Art. 3. Museum of Natural History. Discoveries in natural history, made during a journey through the western region of the United States, by Constantine Samuel Rafinesque, Esq. Addressed to Samuel L. Mitchill, President, and the other members of the Lyceum of Natural History, in a letter dated at Louisville, Falls of Ohio, 20th July, 1818. *American Monthly Magazine and Critical Review*, **3**(5): 354–356.
- Rafinesque, C.S. 1818b. Art. 3. Museum of Natural History. General account of the discoveries made in the zoology of the Western States. *American Monthly Magazine and Critical Review*, **4**(2): 106–107.
- Rafinesque, C.S. 1819. Prodrome de 70 nouveaux genres d'animaux découverts dans l'intérieur des Etats-Unis d'Amérique, durant l'année 1818. *Journal de Physique, de Chimie, d'Histoire Naturelle*, **88**: 287–322.
- Robertson, I.C.S. & Blakeslee, C.L. 1948. The Mollusca of the Niagara Frontier Region. *Bulletin of the Buffalo Society of Natural Sciences*, **19**(3): xi, 1–191.
- Scudder, S.H. 1882. II. Universal index to genera in zoology. Complete list of generic names employed in zoology and paleontology to the close of the year 1879, contained in the nomenclators of Agassiz, Marschall, and Scudder, and in the Zoological Record. In: S.H. Scudder, *Nomenclator Zoologicus*. An alphabetical list of all generic names that have been employed by naturalists for Recent and fossil animals from the earliest time to the close of the year 1879. *Bulletin of the United States National Museum*, **19**(2): 1–340.
- Sherborn, C.D. 1923–1924. *Index Animalium*. Sectio secunda, 1801–1850. Part 2, Index Aff-Anus, pp. 129–384 (1923); part 5, Index C-Ceyl, pp. 945–1196 (1924). British Museum, London.
- Smith, D.G. 1991. *Keys to the freshwater macroinvertebrates of Massachusetts*. Privately published, Amherst, MA.
- Starobogatov, Ya.I. 1970. *Mollusk fauna and zoogeographical partitioning of continental water reservoirs of the World*. 372 pp., 39 figs. Akademiya Nauk SSSR, Zoologicheskii Instituti Nauka, Leningrad. [In Russian].
- Thiele, J. 1931. *Handbuch der systematischen Weichtierkunde*, vol. 1. 778 pp., 782 figures. Fischer, Jena.
- Thompson, F.G. 1984. *The freshwater snails of Florida. A manual for identification*. 94 pp. University of Florida Press, Gainesville, Florida.

- Tryon, G.W. 1865. Complete writings of Constantine Schmaltz Rafinesque on Recent and fossil conchology. *American Journal of Conchology*, 1: 79–84.
- Turgeon, D.D., Bogan, A.E., Coan, E.V., Emerson, W.K., Lyons, W.G., Pratt, W.L., Roper, C.F.E., Scheltema, A., Thompson, F.G. & Williams, J.D. 1988. Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks. *American Fisheries Society Special Publication*, 16: vii, 1–277.
- Vail, V.A. 1979a. The species problem in *Campeloma* (Gastropoda, Viviparidae). *Bulletin of the American Malacological Union*, 1979: 67.
- Vail, V.A. 1979b. *Campeloma parthenum* (Gastropoda: Viviparidae), a new species from North Florida. *Malacological Review*, 12: 85–86.
- van Cleave, H.J. & Altringer, D.A. 1937. Studies on the life cycle of *Campeloma rufum*, a fresh-water snail. *American Naturalist*, 71: 167–184.
- van der Schalie, H. 1964. Notes on the sex of *Campeloma*. *American Malacological Union, Annual Reports*, 1964: 24–25.
- Vaught, K.C. 1989. *A classification of the living Mollusca*. xii, 195 pp. American Malacologists, Melbourne, Florida.
- Walker, B. 1918. A synopsis of the classification of the freshwater Mollusca of North America, North of Mexico, and a catalogue of the more recently described species, with notes. *University of Michigan, Museum of Zoology, Miscellaneous Publications*, no. 6.
- Wood, D.H. 1982. *The aquatic snails (Gastropoda) of the Savannah River Plant Aiken, South Carolina*. 46 pp. Savannah River Plant, SRO-NERP-10.

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